Volunteer Lake Assessment Program Individual Lake Reports

HAUNTED LAKE, FRANCESTOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	3,776	**Max. Depth (m):**	5.2	**Flushing Rate (yr^{1})**	5.4
Surface Area (Ac.):	171	**Mean Depth (m):**	2.4	**P Retention Coef:**	0.52
Shore Length (m):	3,400	**Volume (m^{3}):**	1,361,500	**Elevation (ft):**	636

TROPHIC CLASSIFICATION

Year	Trophic class
1980	EUTROPHIC
2002	MESOTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

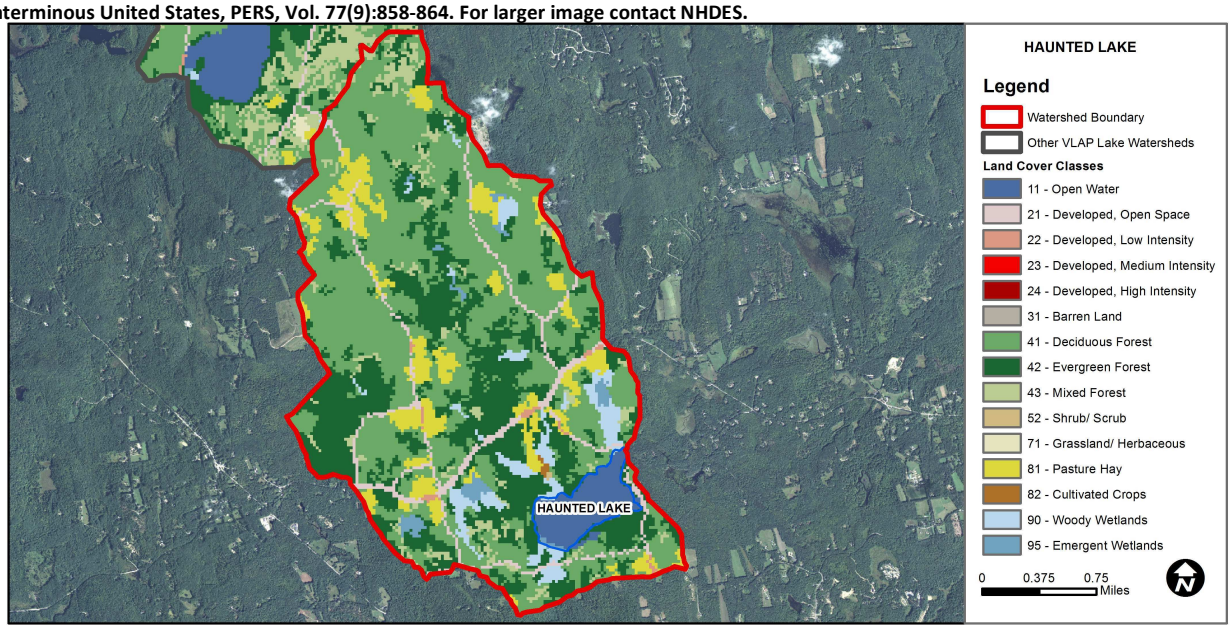
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Encouraging	There are no geometric means or there are > 2 single samples but those samples are within 75% of the geometric means criteria. More data needed.
	Chlorophyll-a	Good	There are at least 10 samples with one, but < 10% of samples, exceeding indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

HAUNTED LAKE - TOWN BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	3.69	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	4.14	Deciduous Forest	46.64	Pasture Hay	8.59
Developed-Low Intensity	0.39	Evergreen Forest	27.26	Cultivated Crops	0.09
Developed-Medium Intensity	0	Mixed Forest	3.98	Woody Wetlands	3.98
Developed-High Intensity	0	Shrub-Scrub	0.03	Emergent Wetlands	1.24

Volunteer Lake Assessment Program Individual Lake Reports

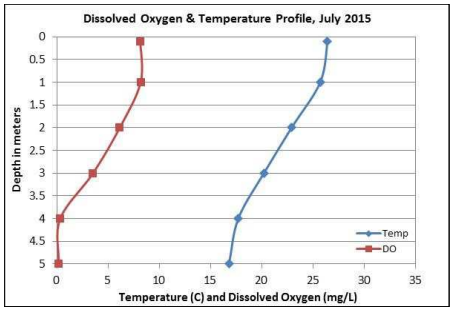
Scobie Pond, Francestown

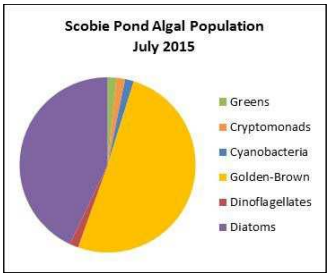
2015 Data Summary

Recommended Actions: Deep spot phosphorus and chlorophyll levels have become increasingly variable and remain within an elevated range for most lakes. The pond is also tea colored indicating dissolved organic matter could contribute to more turbid water and decreased transparency. Increase monitoring frequency to once per month in the summer to better understand seasonal variations in water quality and historical water quality trends. Aquatic plant management activities and subsequent decay of dead plant material may add to the decreased dissolved oxygen levels, phosphorus levels and dissolved organic content of the water. Add apparent color analysis to determine if pond water has become more tea colored (darker) over time. DES JCLC can analyze this free of charge starting in 2016. Keep up the great work!

Observations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were slightly elevated in July, increased slightly from 2014, and were greater than the state median. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot, Inlet and Outlet conductivity and chloride levels were slightly greater than the state medians but not above a level of concern. Historical trend analysis indicates relatively stable epilimnetic (upper water layer) conductivity with moderate variability between years.
- **Total Phosphorus:** Epilimnetic and hypolimnetic (lower water layer) phosphorus levels were elevated and greater than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus since monitoring began. Inlet and Outlet phosphorus levels were within low ranges for those stations.
- **Transparency:** Transparency (NVS) increased (improved) from 2014 but remained less than the state median. Historical trend analysis indicates highly variable NVS transparency since monitoring began. Transparency measured with the viewscope (VS) was higher (better) than NVS transparency and likely a better representation of actual conditions.
- **Turbidity:** Epilimnetic and hypolimnetic turbidities were slightly elevated however were lower than those measured in 2014. Inlet and Outlet turbidities were low. Scobie Pond is a tea colored pond indicating dissolved organic matter could contribute to more turbid water and decreased transparency.
- **pH:** Epilimnetic, Inlet and Outlet pH levels were within the desirable range 6.5-8.0 units, however Hypolimnetic pH was less than desirable and slightly acidic. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.





Station Name	Table 1. 2015 Average Water Quality Data for SCOBIE POND (HAUNTED LAKE)								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	7.8	8.37	12	70.4	18	2.02	2.80	1.31	6.72
Hypolimnion				73.7	18			2.38	5.82
Inlet				72.4	11			0.83	6.74
Outlet				67.8	10			0.77	6.53

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.